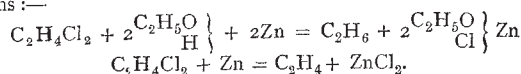


LAST week two remarkably fine examples of the Smooth Hound or Skate-toothed Shark (*Mustelus vulgaris*) were taken in the fish weirs at Rhos Tynach, near Llandudno, and have been secured by Mr. W. Saville-Kent for the tanks of the Manchester Aquarium. The fish arrived in good condition, and have proved to be a pair, male and female. The latter, since its arrival, has presented the institution with six young ones; these are all doing well, already take food, and are now swimming about with the parents in the tank allotted them, 40 ft. long, presenting a most interesting spectacle. Some young herring have been introduced by way of experiment, and the result has been so satisfactory that it is sanguinely anticipated that the Manchester Aquarium will shortly possess as fine a shoal of herring as may be seen at Brighton. The inland position of the former station and the consequent difficulties to be overcome in transit will considerably enhance the value of such an exhibition. The attendance at the weekly lectures and the interest manifested in them continue to increase.

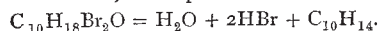
THE additions to the Zoological Society's Gardens during the past week include a Laughing Kingfisher (*Dacelo gigantea*) from Australia, presented by Mr. J. S. White; two Black-handed Spider Monkeys (*Ateles melanochir*) from Central America, presented by Mr. S. W. Rix; a Greater Sulphur-crested Cockatoo (*Cacatua galerita*) from Australia, presented by Miss S. Hooper; a Tamandua Ant-eater (*Tamandua tetradactyla*) from South America, deposited; and three Blotched Genets (*Genetta tigrina*), born in the Gardens.

### SCIENTIFIC SERIALS

THE *Journal of the Chemical Society* for July contains the following papers:—Note on a new mineral from New Caledonia, by Archibald Liversidge. This mineral is a hydrated silicate of nickel and magnesium allied to *alipite*.—Messrs. Gladstone and Tribe contribute the seventh part of their researches on the action of the copper-zinc couple on organic compounds. The substances now submitted to the action of the couple are the chlorides of ethylene and ethylidene. The dry chlorides are not acted on by the couple, even at a boiling heat, but in presence of water a feeble decomposition occurs. The decomposition is more energetic in the case of ethylidene chloride in the presence of alcohol, decomposition taking place according to the equations:—



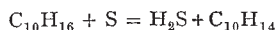
Ethylene chloride only undergoes a small amount of decomposition when mixed with alcohol and heated with the couple.—Isomeric terpenes and their derivatives, Part IV., §1.—On cajuput oil, by Dr. C. R. A. Wright and T. Lambert. The oil was fractionally distilled, and the fraction boiling at 176°–179° (giving on analysis numbers agreeing with the formula  $\text{C}_{10}\text{H}_{18}\text{O}$ ) was used for the experiments described. When treated with bromine the compound  $\text{C}_{10}\text{H}_{18}\text{Br}_2\text{O}$  is produced, and this, on distillation, decomposes as follows:—



The cymene thus obtained is identical with that obtainable from many other terpene derivatives, since it yields by oxidation a mixture of terephthalic and acetic acids.—§ 2. On the action of pentasulphide of phosphorus on terpenes and their derivatives, by Dr. C. R. A. Wright. The action of this substance appears to be the same in the case of citronellol and cajuputol, a terpene being first produced according to the reaction:—

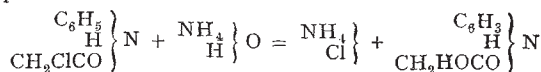


and this terpene by the further action of the pentasulphide splitting up thus:—



The cymene produced is identical with the preceding.—Action of ammonia on phenyl-chloracetamide and cresyl-chloracetamide, by Dr. D. Tommasi. When ammonia is dissolved in a mixture of alcohol and water, and the amides warmed with this

solution, chlorine is exchanged for hydroxyl, according to the equation:—



and similarly with the cresyl compound. This new compound, termed by its discoverer *phenyl-hydroxylacetamide*, is decomposed by boiling water, by potassic, sodic, and baric hydrates, this latter substance yielding aniline and some barium salt not examined. *Cresyl-hydroxylacetamide* is obtained by a similar process, and possesses very similar properties.—On Aqua Regia and the nitroxyl chlorides, by Dr. W. A. Tilden. The dried gases evolved from hot aqua regia when passed into concentrated sulphuric acid give rise to the deposition of a crystalline substance of the formula  $\text{NOHSO}_4$ , while free chlorine and hydrochloric acid gas escape. The acid nitroxyl sulphate heated with dry sodium chloride yields nitroxyl monochloride ( $\text{NOCl}$ ) as an orange-yellow gas liquefying by a freezing mixture of ice and salt. The author's researches prove that this gas is the only compound of nitrogen, oxygen, and chlorine evolved from aqua regia, the reaction being:—



The concluding paper is by Charles E. Groves, On the preparation of ethyl chloride and its homologues. The author passes hydrochloric acid gas into ethylic or methylic alcohol containing fused zinc chloride in solution. The present part contains its usual collection of valuable abstracts.

THE *American Journal of Science and Arts*, July.—Results derived from an examination of the United States weather maps 1872-3, by Elias Loomis; this we shall notice separately.—Prof. C. F. Himes describes a method of preparing photographic dry-plates by daylight, by desensitising and resensitising the silver compounds.—On a molecular change produced by the passage of electrical currents through iron and steel bars, by John Trowbridge. The conclusions are:—(1) The passage of an electric current through an iron or steel bar produces molecular change in it, which is apparent both at the closing and breaking of the circuit. (2) The rapid change of direction of a current through iron or steel bars produces a molecular disturbance which is greater than that imparted by a current sent in one direction alone. (3) Magnetisation of the iron or steel is sufficient to restore it to the normal magnetic state which is imparted by the magnetising helix. (4) The molecular action increases with the strength of the electric current.—The magnetism of soft iron, by David Sears. Mr. Sears follows up the investigations of M. Jamin given in the *Comptes Rendus* for Jan. 12 last. His results are:—(1) With poles of the same name opposed to each other the magnetisation of an iron bar forming the armature of the two poles is greater on a part of the armature beyond the two poles than it is when poles of opposite signs are opposed. (2) On points of the armature between the two poles the magnetisation is greatest when poles of the opposite names are opposed. A north and south pole attract an armature, therefore, with much greater force than two north or two south poles. (3) M. Jamin's conclusions from the experiments upon an iron bar forming a core to the enveloping helices are as follows:—(3°) "If the theory of solenoids is admitted, the action of parallel currents should be to increase the intensity of magnetisation; on the contrary, it is diminished. (4°) When the currents in the magnetising helices run in opposite directions, they should act opposed to each other on the currents circulating around the particles of the iron, and should diminish each other's action; on the contrary, it is increased. (5°) The action of the helices should be annulled at the middle of the bar. It is not." When the bar to be experimented on forms not the core, but the armature of two electro-magnets, the effects obtained are the reverse of those obtained by M. Jamin, and tend to confirm the theory of solenoids.—Mineralogical notes: Tellurium ores of Colorado; Geology of the Gold Hill Mining Region, with a map.—Notes on diffraction gratings, by John M. Blake, with woodcuts. After a long account Mr. Blake mentions that in many points he has been anticipated by Lord Rayleigh in the *Phil. Mag.* for February last. The explanation of the origin of the "bands" differs from Lord Rayleigh's.—On the spectrum of the Zodiacal Light, by A. W. Wright. A Duboscq spectroscopic with a single prism was employed, the telescope and collimator of which have a clear aperture of 2.4 centimetres. The magnifying power of the former is nine diameters, Special

precautions were taken with the observations, and from them is drawn the following conclusions:—(1) The spectrum of the zodiacal light is continuous and is sensibly the same as that of faint sunlight or twilight. (2) No bright line or band can be recognised as belonging to this spectrum. (3) There is no evidence of any connection between the zodiacal light and the polar aurora. The deduction, drawn from the fact of its polarisation, that the zodiacal light is derived from the sun and is reflected from solid matter, is thus strengthened and confirmed by the identity of its spectrum with that of solar light. A discussion of the distribution of the reflecting matter in space is reserved for another article.—On the age of the copper-bearing rocks of Lake Superior; and on the westward continuation of the Lake Superior synclinal, by Roland Irving, with map and section.—On the parallelism of coal seams, by E. B. Andrews. This refers to the difference of opinion already expressed between Dr. Newberry and Mr. Andrews. Their question is whether the ancient shore lines with their coal marshes subsided in an even and uniform way, or very unevenly.

*Journal of the Franklin Institute*, May and June.—Section: Chemistry, Physics, Technology.—Prof. H. Wurtz's report On the water supply of the cities of Newark and Jersey City is continued, as is also Prof. Thurston's communication On investigations of the resistance of materials.—Dr. Lewis Feuchtwanger contributes a paper On baryta: its manifold uses in the arts.—Dr. C. Cooley describes a new connection thermoscope, by which the sensibility is increased, and its adaptation to a wider range of experiments secured.—Mr. Isherwood reports on Russian coals from the basin of the Don. He states they will doubtless soon be substituted for English coal along the shores of the Black and Mediterranean seas.

*Neue Denkschriften der Allgemeinen Schweizerischen Gesellschaft für die Gesamten Naturwissenschaften*, Band xxv. Zurich, 1873.—M. Mousson has made a general revision of the terrestrial malacological fauna of the Canary Islands, discussing and defining, as far as possible, all the species hitherto mentioned; and the results of this inquiry are here detailed in a comprehensive memoir on the subject. It appears that, according to the present state of our knowledge, the Canaries altogether contain 183 certain species of terrestrial and fluviatile molluscs; the largest numbers being presented by Tenerife (90) and Palma (43); which may, in part, be explained by greater extent and richness of soil, and fuller exploration. The small proportion of fluviatile species is striking (there are only ten); it is probably due to the irregular character of most of the water courses, at times quite torrential, at others attenuated to a mere thread, or wholly dried up. Deposits of terrestrial shells are found at various points of the Canaries; and some lists which the author constructs from M. de Fritsch's inquiries on the subject appear to indicate three different degrees of antiquity in these remains. The deposits of Gomera and Fuerteventura, containing a series of species which have no present analogues, are older than those of Gran Canaria, which do present actual species though modified in the form of varieties; and the latter again are older than those of Tenerife, the *débris* of which correspond entirely to extant forms. M. Mousson's observations in comparison of the Canarian fauna with those of neighbouring continents and islands are specially interesting. He concludes that the essential part of the malacological fauna of the Canaries is not reducible to any other fauna, and appears to have been developed in a manner perfectly autonomous. The particular features characterising the Canarian fauna consist of the predominance of certain sections of species, or of certain types, which elsewhere do not appear in the same manner, and the elimination of entire genera that occupy an important place in neighbouring fauna. "The only satisfactory explanation of this fact," says M. Mousson, "is that these islands, the objects in which, though often, distinct from one another, yet range for the most part about common centres, have formed, since the origin of the present epoch (that is, since the great overturns which have separated the Tertiary epoch from the Quaternary, and opened the era which still continues), an independent whole separated by uncrossable barriers, by the sea, doubtless, from the African and European continents, as also from the Madeira and Cape Verde Islands; which, themselves also, were independent." The differences between the old and recent fauna are attributable (on this view) rather to local overturns connected with the variable and volcanic nature of the ground than to geological and general climatic conditions; for

most of the types have remained nearly the same, and have traversed the different sub-fossil fauna that are distinguishable. The diversity of neighbouring forms in the different islands denotes a separation of distant date, but proves nothing as regards the possibility of these islands having once formed a small compact continent, afterwards broken up.—The second and only remaining memoir in this volume is by Prof. Rüttimeyer, and has for its subject the fossil tortoises of Solothurn and the rest of the Jura formation. The author's investigation is of a thorough and exhaustive character, and the paper (with its 17 beautifully executed lithograph plates), will be found a valuable contribution to this branch of palæontology.

*Revue d'Anthropologie*, t. iii. No. 1, 1874.—M. Gustave Lagneau, in the first paper, considers the grounds on which a purely Celtic origin may be ascribed to the primitive inhabitants of the Basin of the Saône and of the Rhone valley and its dependencies; and after sifting the evidence afforded by ancient and modern authorities he is led to ascribe a mixed origin to these peoples.—M. G. de Rialle devotes a long and very comprehensive paper to the history of the peoples of Central Asia.—M. F. Moreno's account of his discovery of some Prehistoric burying-grounds and *paredos*, or ancient Indian habitations, on the shores of the Rio Negro (Patagonia) forms a valuable contribution to our knowledge of the anthropological characters of the primitive inhabitants. M. Moreno's paper is enriched with a table of cranial measurements, comprising a series of results obtained from forty-five skulls.—M. T. Chudzinski gives the result of his observations on the muscular system of the negro, derived from the autopsy of three subjects at the Paris School of Anthropology, reserving for a future number the general considerations to which the facts observed seem to point.—The recent discovery in one of the Canaries of a Libyan inscription, such as has hitherto been found only in Numidia, has called forth some remarks from M. Faidherbe on the ethnology of the Canarian group. The writer believes that the population of the Canaries may be referred to Oulofs, or West African blacks, to African Libyans, and probably to Phœnicians, besides a later intermingling with Europeans; and it is to the agency of Phœnician traders that he ascribes the knowledge of the Libyan characters and the practice—whose prevalence is amply proved—of embalming the dead, and reducing them to the state of mummies, in which condition they have been found among the natives of these islands.—In No. 2 of this year's series M. Topinard discusses at length the accuracy of Camper's facial angle, and the correctness and sufficiency of the data on which it was based. As the first attempt to establish a system of human craniometry, Camper's definition of the facial angle deserves the greatest respect, and M. Topinard shows that the subsequent depreciation of the value of his method is chiefly due to the vague and variable modes of its application, which originated with Geoffrey Saint-Hilaire and Cuvier. M. Topinard is of opinion that even when used with the greatest attention to the rules which Camper himself prescribed, his method can scarcely be employed with perfectly identical results by different observers, and hence he thinks it would be advisable to adopt some less variable process of determining the maxima and minima for the facial angle. The science of craniology is beginning to assume a more reliable character, and we may therefore hope that craniologists will soon find themselves in a position to adopt some definite and universally applicable method. This, however, can scarcely be attained till the fact is recognised that in craniometric measurements it is the means and not the extremes which we ought to aim at obtaining; the former are alone safe, the latter tend to error.—French geologists are still devoting a large amount of attention to that richest of all palæontological sources, the limestone districts of the Dordogne. In an additional note on the cave of the church at Excideuil, M. Parrot gives us the results of one of the most recent explorations of that region. A careful examination of this cave or crypt has revealed the fact that below the floor, at various depths, lie buried the *débris* of the Quaternary fauna intermingled with the remains of products of industry, belonging evidently to men contemporaneous with the animal deposits with which they are mixed. Reindeer, beavers, bears, are here all represented, and the industrial objects found are similar in character to those of the other caverns, but there are also numerous remains of jasper not met with elsewhere, and the bones have undergone a softening process hitherto unobserved. In other respects the cave of Excideuil offers no novel interest.—M. Hovelacque discusses the ethnological characters of seven genuine Tsigane skulls in the Paris Museum.